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Division of Mycology and Disease Survey

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BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XX April 15, 1936 Number 7

IN THIS ISSUE

Some additional records of Alaskan fungi are listed by Edith K. Cash, page 121. Many of them have not been reported from the region previously.

English mosaic, a virus disease of raspberry different from any common in this country, is reported from Oregon, page 123.

B. A. Rudolph and W. C. Snyder report the occurrence of Verticillium wilt of snapdragon, watermelon, celery, and cowpea in California, page 125.

Tests show very poor germination of cotton seed in Georgia, particularly in the southern part of the State, according to H. W. Rankin, page 126.

Phomopsis canker of Gardenia is reported from Nebraska by R. W. Goss, page 128.

Powdery mildew seems to be rare on Petunia. It is reported from West Virginia by John L. Sheldon, page 128.

Reports on the development of the apple scab fungus in Massachusetts, New York, Maryland and Georgia, page 128.

March weather, page 130.

ADDITIONAL RECORDS OF ALASKAN FUNGI

Edith K. Cash

Fungi collected by G. F. Gravatt in Alaska in August and September 1934 are listed with host and locality of each. The species marked by an asterisk, comprising 38 out of the 71, are those not reported from the region in any previously published list. References to articles on fungi from Alaska were given by the writer in Alaskan Fungi, Plant Disease Reporter 18: 74-88, July 1, 1934. The Uredinales were identified by J. A. Stevenson and E. M. Ermold; host determinations were made by R. K. Beattie and E. C. Leonard.

PERONOSPORALES

* PERONOSPORA ALTA Fckl. on Plantago sp., Cordova, det. J. A. Stevenson.
* PERONOSPORA POTENTILLAE DBy. on Potentilla sp., Wrangell.
PHYTOPHTHORA INFESTANS (Mont.) DBy. on Solanum tuberosum (cult.), Wrangell.
PLASMOPARA EPILOBII (Rabh.) Schroet. on Epilobium latifolium, Cordova and Valdez.
PLASMOPARA NIVEA (Ung.) Schroet. on Ligusticum scothicum, Valdez; on Umbelliferae, Seward.

ASCOMYCETES

ANTENNARIA RECTANGULARIS Sacc. on Harrimanella sp., Nelly Juan.
DIMEROSPORIUM TSUGAE Dearn. on Tsuga sp., Cordova.
* KEITHIA TSUGAE Farl. on Tsuga sp., Cordova.
MICROSPHAERA ALNI (Wallr.) Wint. on Alnus sp., Wrangell.
MYCOSPHAERELLA STROMATOIDEA Dearn. on Rumex sp., Seward.
* PLEOSPORA VULGARIS Niessl on Labiatae (cult.), Seward.
PSEUDOPEZIZA TRIFOLII (Bernh.) Fckl. on Trifolium sp., Wrangell.
RHYTISMA SALICINUM (Pers.) Fr. on Salix sp., Cordova, det. J. A. Stevenson.
SPHAEROTHECA HUMULI var. FULIGINEA (Schl.) Salm. on composite (?Prenanthes), Petersburg.
* SPHAERULINA TRIFOLII Rostr. on Trifolium sp., Ketchikan and Wrangell.

UREDINALES

GYMNOSPORANGIUM NELSONI Arth. 0, I on Malus diversifolia, Cordova and Wrangell.
HYALOPSORA ASPIDIOTUS (Pk.) Magn. II on Dryopteris linneana, Cordova.
MELAMPSORA ARCTICA Rostr. II on Salix sp., Cordova and Valdez.
* MELAMPSORA RIBESIAE-PURPUREAE Kleb. II on Salix sp., Seward.
PUCCINIA CARICIS (Schum.) Schroet. III on Carex atratiformis, Cordova.
PUCCINIA HEUCHERAE (Schw.) Diet. III on Heuchera glabra, Cordova; on Tiarella trifoliata, Cordova.

PUCCINIA HIERACII (Schum.) Mart. II, III on Taraxacum officinale, Seward and Cordova.
PUCCINIA ORTONII Jacks. II, III, on Dodecatheon (?jeffreyi), Port Benny.
PUCCINIA PORPHYROGENITA Curt. III on Cornus canadensis, Cordova.
PUCCINIA PYGMAEA Eriks. II on Hordeum nodosum v. boreale, Cordova, ver. G. B. Cummins.
PUCCINIASTRUM PUSTULATUM (Pers.) Diet. II on Epilobium sp., Cordova; on Chamaenerion spicatum, Seward.

FUNGI IMPERFECTI

ACTINONEMA ROSAE (Lib.) Fr. on Rosa sp. (cult.), Cordova.
* ASCOCHYTA AQUILEGIAE (Rabh.) Hoehn. on Aquilegia sp. (cult.), Wrangell and Cordova. The spores vary from 1-celled, 8-10 x 3u, to 2-celled, 15-17 x 5u.
Examination of type material of Phyllosticta aquilegiae Tehon and Daniels indicates that it is the same fungus, as was suggested by J. J. Davis, Trans. Wisc. Acad. Sci. 26: 253, 1931, and it is probable that Marsonia aquilegiae Dearn. is another synonym.
* ASCOCHYTA COMPOSITARUM var. PARVA Davis on composite (cult.), Wrangell.
* ASCOCHYTA HYDRANGEAE Arn. on Hydrangea sp. (cult.), Cordova.
* ASCOCHYTA LYCOPERSICI Brun. on Solanum tuberosum (cult.), Wrangell.
* ASCOCHYTA TARAXACI Grove on Taraxacum sp., Ketchikan and Seward.
* ASCOCHYTA VIOLICOLA McAlp. on Viola sp. (cult. pansy), Wrangell.
BOTRYTIS VULGARIS Fr. (B. CINEREA Pers.) on Papaver sp. (cult.), Seward.
* CERCOSPORA MACROSPORA Osterw. on Viola sp. (cult. pansy), Wrangell. Described from Switzerland. The Alaska specimen agrees with Osterwalder's description, Mitt. Thurgau Naturf. Ges. 25: 59-80, 1924. The spores remain hyaline for a long time, but are said by Osterwalder to become colored when fully mature.
* CERCOSPORA VARIA Pk. on Viburnum sp., Cordova.
CLADOSPORIUM HERBARUM (Pers.) Lk. on Pisum sativum (cult.), Wrangell.
CLADOSPORIUM PAEONIAE Pass. on Paeonia sp. (cult.), Wrangell.
* COLLETOTRICHUM LINEOLA Cda. on Gramineae, Port Benny.
* EPICOCCUM PURPURASCENS Ehr. on Lupinus sp. (cult.), Wrangell.
FUSICLADIUM DEPRESSUM (Berk. & Br.) Sacc. on Angelica sp.(?), Cordova.
GLOEOSPORIUM AINI Ell. & Ev. on Alnus sp., Port Benny.
* HETEROSPORIUM SPIRAEAE Syd. on Spiraea sp. (cult.), Wrangell.
* HYALOCERAS KRIEGERIANUM (Bres.) Died. (DISCOSIA BUBAKII Kab.), on Epilobium sp., Wrangell.
MARSONIA POTENTILLAE (Desm.) Fisch. on Fragaria sp. (cult.), Cordova.
* MELASMIA MENZIESIAE Dearn. & Barth. on Menziesia ferruginea, Wrangell; on Menziesia sp., Wrangell, Cordova, and Ketchikan. Reported in previous lists as Rhytisma arbuti Phill.
* OVULARIA OBLIQUA (Cke.) Oud. on Rumex sp., Valdez; on Polygonaceae, Petersburg.
* PHYLLOSTICTA ALCIDES Sacc. on Populus sp., Seward.
* PHYLLOSTICTA AINEA Oud. on Alnus sp., Valdez.

* PHYLLOSTICTA BALDENSIS C. Mass. on Paeonia sp., (cult.), Wrangell.
* PHYLLOSTICTA HERACLEI Ell. & Dearn. on Heracleum sp., Cordova.
* PHYLLOSTICTA MELANOPLACA Thuem. on Liliaceae (?Veratrum), Ketchikan.
*PHYLLOSTICTA RIBESICIDA Speg. on Ribes sp. (wild currant), Wrangell.
* RAMULARIA ARMORACIAE Fckl. on Capsella sp., Seward.
RAMULARIA CERCOSPOROIDES Ell. & Ev. on Epilobium sp., Seward, Cordova, and Wrangell. Possibly one of the many synonyms of R. punctiformis (Schl.) Hoehn.
* RAMULARIA LACTEA (Desm.) Sacc. on Viola sp. (cult. pansy), Wrangell.
* RAMULARIA PLANTAGINIS Pk. on Plantago sp., Petersburg, det. J. A. Stevenson.
* RAMULARIA RETICULATA Ell. & Ev. on Umbelliferae (?Ligusticum), Port Benny.
RAMULARIA RUBICUNDA Bres. on Unifolium sp., Wrangell, Ketchikan, and Port Benny. For occurrence in U. S. see J. J. Davis, Trans. Wisc. Acad. Sci. 22: 168, 1926, and S. M. Zeller, Mycologia 27: 466, 1935.
* RAMULARIA TARAXACI Karst. on Taraxacum sp., Seward, Ketchikan, and Cordova.
* RHABDOSPORA PASTINACINA (Sacc.) Allesch. on Heracleum sp., Cordova.
* SEPTOGLOEUM LUPINI Ell. & Ev. on Lupinus sp. (cult.), Wrangell.
SEPTORIA CANADENSIS Pk. on Cornus canadensis, Ketchikan.
* SEPTORIA EPILOBII Westd. on Epilobium sp., Ketchikan.
* SEPTORIA GEI Rob. & Desm. on Geum sp., Petersburg.
* SEPTORIA POLYGONINA Thuem. on Polygonum sp., Seward.
SEPTORIA RUBI WEST. on Rubus sp., Wrangell, Cordova, and Ketchikan.
* SEPTORIA SAMBUCINA Pk. on Sambucus sp., Cordova and Wrangell.
* SEPTORIA URTICAE Desm. on Urtica sp., Wrangell.
* STICTOCHORELLA LUPINI Syd. on Lupinus sp. (cult.), Wrangell.
(Division of Mycology and Disease Survey).

OCCURRENCE OF ENGLISH MOSAIC ON RED RASPBERRY IN OREGON

The history of the occurrence of a mosaic, distinct from any virus disease common in this country, on Lloyd George red raspberry in the Northwest is given in the following quotations from correspondence with S. M. Zeller of the Oregon Agricultural Experiment Station, and George L. Slate of the New York State Agricultural Experiment Station at Geneva. The Lloyd George is an English variety, and was introduced and distributed by the Geneva Station.

Dr. Zeller writes as follows:

"Dr. Ralph Harris of England, who spent last year at the Ontario Station, Canada, tells me that for the most part the Lloyd George raspberry in the eastern part of the United States appeared very healthy. It seems, however, that when the Lloyd George is shipped west of the Cascade Mountains to Oregon, Washington, or British Columbia, the plants harboring the virus show symptoms here after about the first year. We have had several plantings of this stock which originated from Geneva turn out to be very badly infected. Therefore, although I have not seen the particular planting which Mr. C. E. Stewart, County Fruit Inspector at Cottage Grove, Oregon, wrote to Mr. Barss about, I am not surprised. In nearly every

case we have been successful in getting the grower to plow out the planting or to rogue out the diseased plants if they were still young and the spread was not great. By diligent effort we have, therefore, some stock which under Oregon conditions shows no mosaic.

"The mosaic of Lloyd George raspberry is not the red raspberry mosaic of America. It is a distinct virus disease. I cooperated with Dr. Harris and photographed plants here and also sent him specimens and he says our disease as it shows up here on the Lloyd George in Oregon is very typical of the English red raspberry mosaic.

"The ordinary raspberry mosaic is common in western Washington, and also in eastern Washington and Idaho. There have been reports of the mosaic in California. Therefore, the state of Oregon put on a quarantine against raspberry or any type of Rubus stock shipped into the State. We can receive here at the Experiment Station material for observations if any new varieties are desired. This quarantine was put on because our commercial stock in general is entirely virus-free, at least free from known viruses. The Cuthbert is our only real commercial variety of raspberry. It seems to be fairly free from mosaic. There were being introduced, however, stock of other varieties which we feared might add to our difficulty and, therefore, the State Department of Agriculture instituted the quarantine."

Dr. Slate furnishes the following information concerning the Geneva stock of the variety.

"Our original stock of Lloyd George was imported from England in the springs of 1923 and 1924. Twenty plants were received from R. H. Bath, Wisbeck, England, in the spring of 1923 and thirteen plants from Geo. Bunyard and Co., Maidstone, England, in the spring of 1924. The two stocks were set in the same row in 1924, and on proving identical, one stake was pulled out and the stocks united. All plants sent out by this Station were descended from this stock.

"In March 1928 we imported 1000 plants from the East Malling Research Station, East Malling, England. During the summer it became evident that about 10 to 20 percent of this stock was infected with some virus disease, and the entire lot was destroyed. I do not recall that Dr. W. H. Rankin expressed any opinion as to the identity of this mosaic, but I remember that the symptoms were distinct.

"The original planting was held until 1934 and plants were dug from it many times and distributed by the Station or Fruit Testing Association. Dr. Rankin rogued this planting regularly and I feel fairly certain that he did not remove any plants because of mosaic. I did not see any either, and as we discussed this variety many times, I feel sure that I would remember if any recognizable disease had been found.

"In our present planting of Lloyd George which was set in the fall of 1932 with plants from the original lot, I found two plants last year with mosaic. The symptoms were very strong, but I do not know which virus was responsible.

"In the block with the original Lloyd George stock were a number of other English and American sorts. The amount of mosaic in the latter was never very great. The English varieties, however, were probably full of mosaic, many of them being apparently 100 percent diseased. Most of them were very weak, partly from the hot sun, partly from winter injury, and partly from mosaic. The symptoms did not resemble those of our American mosaics. In the same row with Lloyd George were several English sorts, at least one of which was 100 percent mosaic. The variety adjoining Lloyd George was partly diseased with a peculiar virus, in which part of the leaf was apparently normal while the rest had more or less typical mosaic symptoms. Dr. Rankin ventured a guess that it might have been a sectorial chimera with part of the plant resistant but the matter was never followed up.

"I sent twenty-five plants of Lloyd George to Corvallis in April 1929 and I think the Fruit Testing Association sent plants west at various times."

VERTICILLIUM FROM SNAPDRAGON, WATERMELON, CELERY AND COWPEA

B. A. Rudolph and W. C. Snyder

Numerous writers in the United States and Europe have referred to Verticillium wilt of snapdragon (Antirrhinum majus L.), but no report of the disease in California has been found. During the past autumn, V. albo-atrum R. and B. was isolated from wilting snapdragons of a rust-proof strain grown at Berkeley, California. Some plants showed complete wilting while in others there was a unilateral development of the disease. Cross sections revealed the presence of mycelium in the stem vessels, and such tissue yielded pure colonies of V. albo-atrum.

Diseased watermelom plants (Citrullus vulgaris Schrad.), received from the Milipitas section in the San Francisco Bay region last September, also have yielded pure cultures of V. albo-atrum. The plants showed symptoms which at first suggested Fusarium wilt. Outside of a very brief report of a Verticillium disease of watermelons observed by Wollenweber in Oregon in 1922, no other reference to the disease in this plant in this country or abroad has been observed in the literature. Wilting muskmelon (Cucumis melo L.) plants grown near the diseased watermelons also yielded V. albo-atrum consistently in culture. Although the disease in muskmelons has been reported once before in California, this is the first reference to watermelon verticilliosis in the State.

In rare instances Verticillium of the albo-atrum type has been isolated with Fusarium from the interior of celery plants (Apium graveolens L.) showing symptoms of Fusarium yellows. A similar situation was obtained with cowpea plants (Vigna sinensis Endl.) collected in the Sacramento valley in September, and found to be infected principally with Rhizoctonia. In both cases the Verticillium was isolated from the interior of diseased plants but only rarely and not in pure culture. In this respect the celery and cowpea isolations differed from those from snapdragon and watermelon. No reports in the literature have been seen listing either celery or cowpea as hosts of V. albo-atrum.

All cultures of V. albo-atrum referred to in this report have produced pseudo-sclerotia in abundance. (Division of Plant Pathology, University of California.)

POOR GERMINATION OF COTTON SEED IN GEORGIA

H. W. Rankin

Cotton seed was badly damaged here last year. Throughout the winter we have been running germination tests at the College and in the various counties. The data from which figure 30 and table 12 were compiled are

Table 12. Percentage of germination of cotton seed in various counties of Georgia as shown by germination tests.

County	Number of Tests	Average Germination %	County	Number of Tests	Average Germination %
Appling	3	69	Irwin	36	70
Bacon	3	68	Jenkins	107	72
Butts	1	88	Johnson	5	81
Bleckley	3	82	Miller	1	79
Baker	7	49	Montgomery	5	68
Berrien	5	44	Macon	3	79
Burke	9	79	Pierce	4	52
Cook	25	66	Peach	13	75
Clarke	2	95	Pulaski	21	79
Calhoun	9	58	Richmond	1	99
Crisp	6	72	Screven	14	59
Clay	8	65	Sumter	19	43
Colquitt	7	61	Toombs	3	78
Cobb	1	96	Tift	100	56
Candler	7	73	Tatnall	5	73
Dougherty	52	54	Twiggs	9	80
Decatur	2	64	Talbot	1	72
Dodge	12	70	Turner	7	71
Dooley	1	83	Terrell	300	63
Emanuel	26	82	Thomas	1	83
Effingham	12	61	Worth	3	63
Early	140	50	Wilcox	3	74
Evans	2	69	Webster	1	82
Franklin	2	85	Wheeler	5	85
Hancock	11	77	Washington	27	83

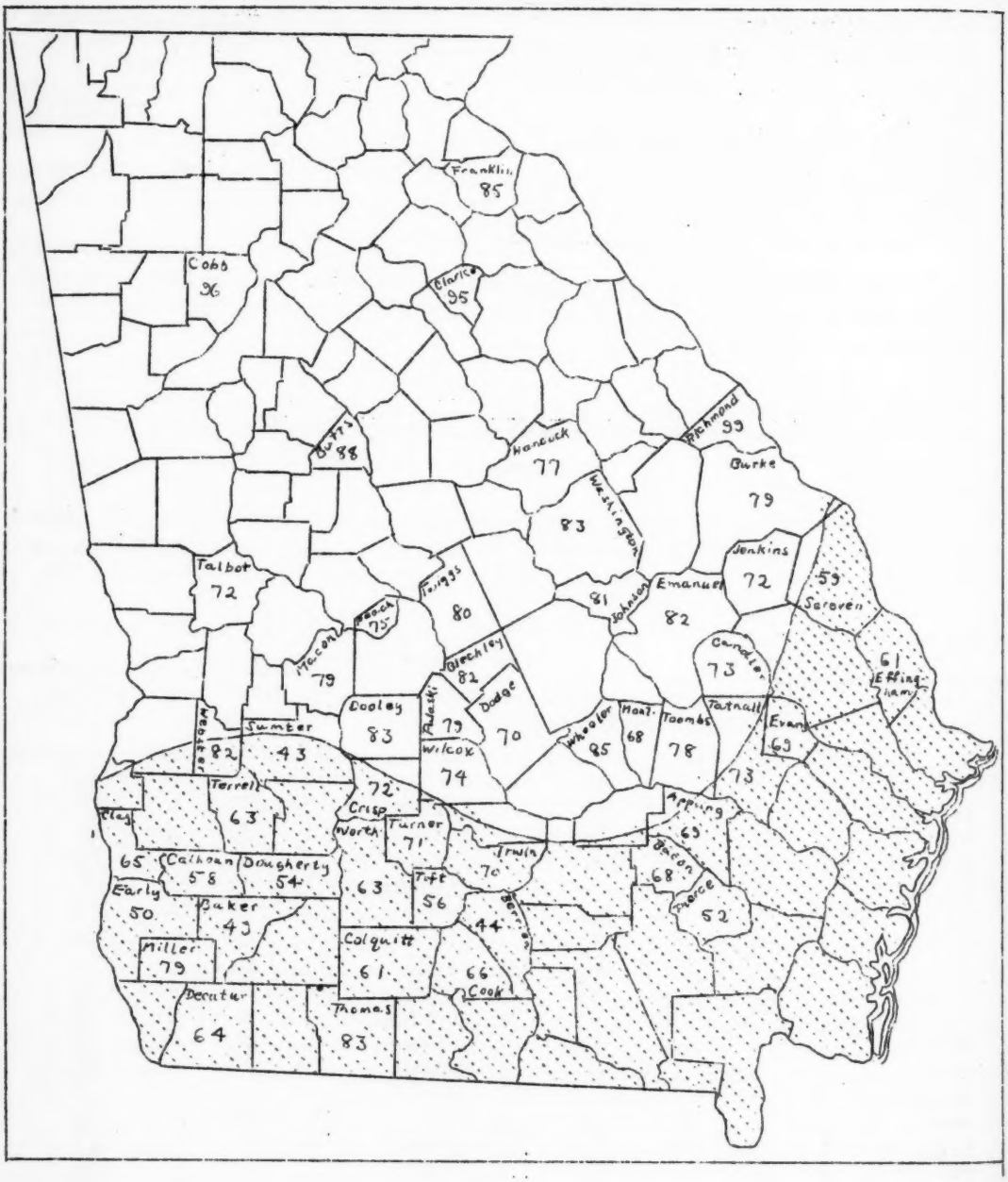

Fig. 30 Results of germination tests of cotton seed in Georgia. Figures are percentage of germination. Shaded area denotes counties in which the greatest amount of damage occurred in August and September 1935. Seed treatment recommended in this area.

the results of about 1000 tests of which I have the records. I have been unable to get records from many more counties.

Since the varieties needed in southern Georgia, where the situation is worst, are of the wilt-resistant type, and since the producers of those varieties had their seed beds badly damaged, we have been recommending that the farmers treat their seed this year. I wish I could say that many had done so, but I am not sure that this is true. (Georgia Agricultural Experiment Station).

PHOMOPSIS CANKER OF GARDENIA IN NEBRASKA

R. W. Goss

In 1935 a canker disease of Gardenia was found in a greenhouse at Lincoln, in a shipment from nurseries at Belmont, Massachusetts. One variety, the Belmont, was 100 percent infected. The canker was due to a species of Phomopsis, apparently the same as that reported by H. N. Hansen and C. E. Scott as the cause of a similar disease in California. (A canker and gall disease of Gardenia. Science n. s. 79: 18. Jan. 5, 1934.)

POWDERY MILDEW ON PETUNIA IN WEST VIRGINIA

A specimen of Petunia affected by a powdery mildew was received from John L. Sheldon, April 14. Mr. J. A. Stevenson of this Division determined the fungus as Oidium sp. and commented as follows:

"Reports of powdery mildew on Petunia are rare. There seems to be only one previous report in this country, from New York in 1930. It has been reported once from Ecuador and once from Southern Rhodesia. The specific determination is doubtful since only the imperfect stage is present. The fungus is possibly Erysiphe cichoracearum."

REPORTS ON APPLE SCAB (VENTURIA INAEQUALIS)

MASSACHUSETTS: The more advanced orchards in Massachusetts are now ready for the delayed dormant spray which ordinarily is put on for insects only. Because of the abnormally early maturity of scab spores, we are recommending this year a fungicide in this application. In such orchards, with the green tips just beginning to separate in the fruit buds, scab is as far along as it usually is at mid or late blossom. In fact, indications are now that at least half of the spores have been discharged.

Up to the present time, the weather has been extremely favorable for the maturity and the discharge of ascospores. As a result of the

frequent rains, following the rapid melting of the deep snow, many orchards are in such condition that the growers can not enter them with spray rigs. On the whole, this situation does not look very favorable for satisfactory, early control of apple scab. (O. C. Boyd, Massachusetts Agricultural Experiment Station. April 16.)

NEW YORK: Collections of overwintered McIntosh leaves, April 6, from a severely scabbed orchard showed colored ascospores in 75 percent of the perithecia with over half of the spores colored in 32 percent. In the leaf samples taken April 6 in the college McIntosh orchard, with less severe scab, 66 percent of the perithecia showed some colored ascospores and over half the ascospores were colored in 40 percent. Ascospores were shot in small numbers when leaves of the lot were wet and placed over trap slides over night in a moist chamber. No discharge was noted from the leaves from the college orchard.

Perithecia in a sample taken from the Hamilton orchard, an early location on the ridge in Niagara County, showed colored ascospores in 72 percent of the perithecia with over half colored in 24 percent. No ascospore discharge was noted.

Strikingly different from these three counts are those on McIntosh leaf samples of April 10 from the Kolbow orchard in a late location right on Lake Ontario in Niagara County where only 27 percent of the perithecia showed colored ascospores. Of these, less than 10 percent of the spores were colored in 14 percent of the perithecia and over half the spores were colored in but 6 percent. A high proportion of the perithecia (48 percent) showed well developed asci, but no ascospores cut out while in 9 percent of the perithecia hyaline spores only were present.

A leaf sample from the Eaton Orchard in Wayne County did not yield sufficient perithecia for an accurate count. It appeared considerably more advanced than the Kolbow orchard, but not as mature as the Hamilton orchard and the Ithaca samples. (W. D. Mills, New York Agricultural Experiment Station, April 13.)

MARYLAND: On account of the continued rain in the past week, the scab fungus has developed more rapidly than usual. There is a heavy infection of scab carried over on the 1935 crop of leaves and indications point to another bad "scab year" unless sprays are applied at the proper time. The most important scab spray is the first one, which should be applied just before the spores are discharged.

Scab spores were observed discharging under the microscope from scabby leaves taken from orchards near the college on April 10. They were "shooting" in the upper Montgomery County region on April 11. Mature scab spores were observed near Frederick, while those from the Thurmont region were not quite mature on April 12. Observations of

leaves on the west side of the mountains in the Smithsburg section show spores less mature than from the Hancock region, while in the Ringgold section, spores are maturing. Observation of leaves in the Hancock region show visible spores in the ascus, which should mature following the next major rain. (R. A. Jehle and E. A. Walker, Maryland Agricultural Experiment Station, April 13.)

GEORGIA: The first mature ascospores of the apple scab fungus were found in Fannin and Rabun Counties on March 16. (H. W. Rankin, April 11.)

MARCH WEATHER

The accompanying maps, figures 31 and 32, taken from the Weekly Weather and Crop Bulletin for the week ending April 7, show that March was abnormally warm over practically all of the country, except the Northwest, where it was somewhat cooler than usual. Precipitation was deficient over a large part of the country, the deficiency being most marked in the "Dust Bowl" area. The Atlantic Coast, on the other hand, received a great excess of precipitation, resulting in disastrous floods from Virginia northward.

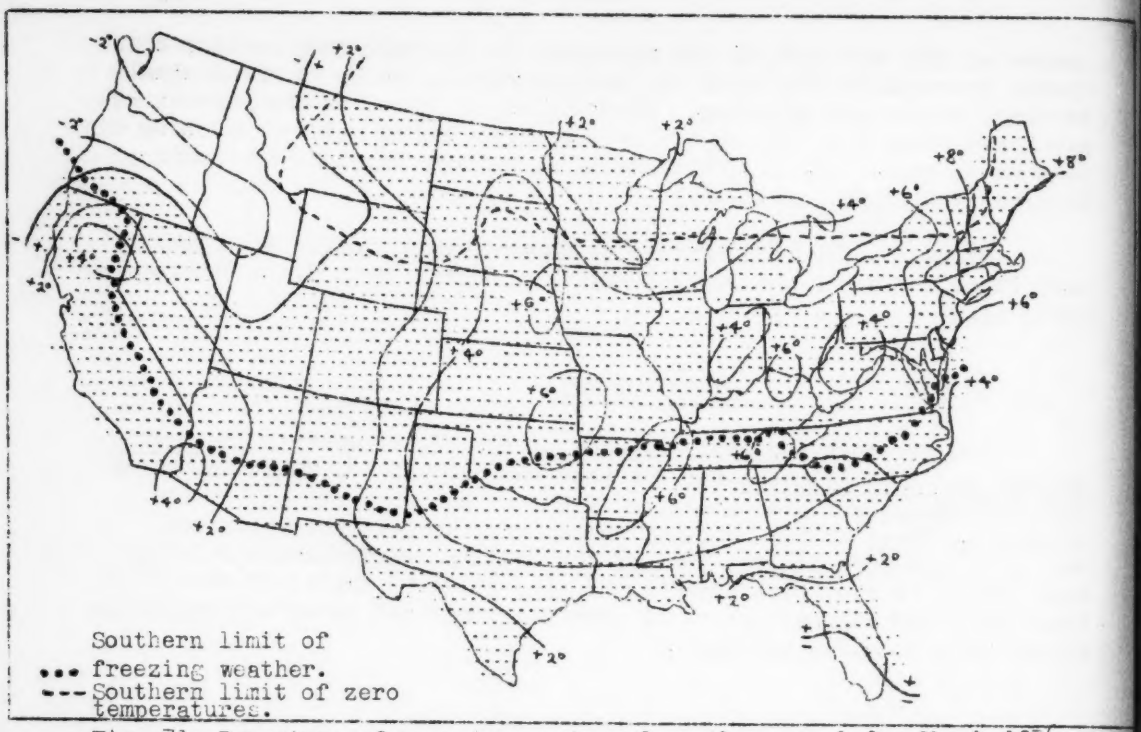

Fig. 31 Departure of mean temperature from the normal for March 1936. Shaded portions show excess (+). Unshaded portions show deficiency (-). Lines show amount of excess or deficiency.

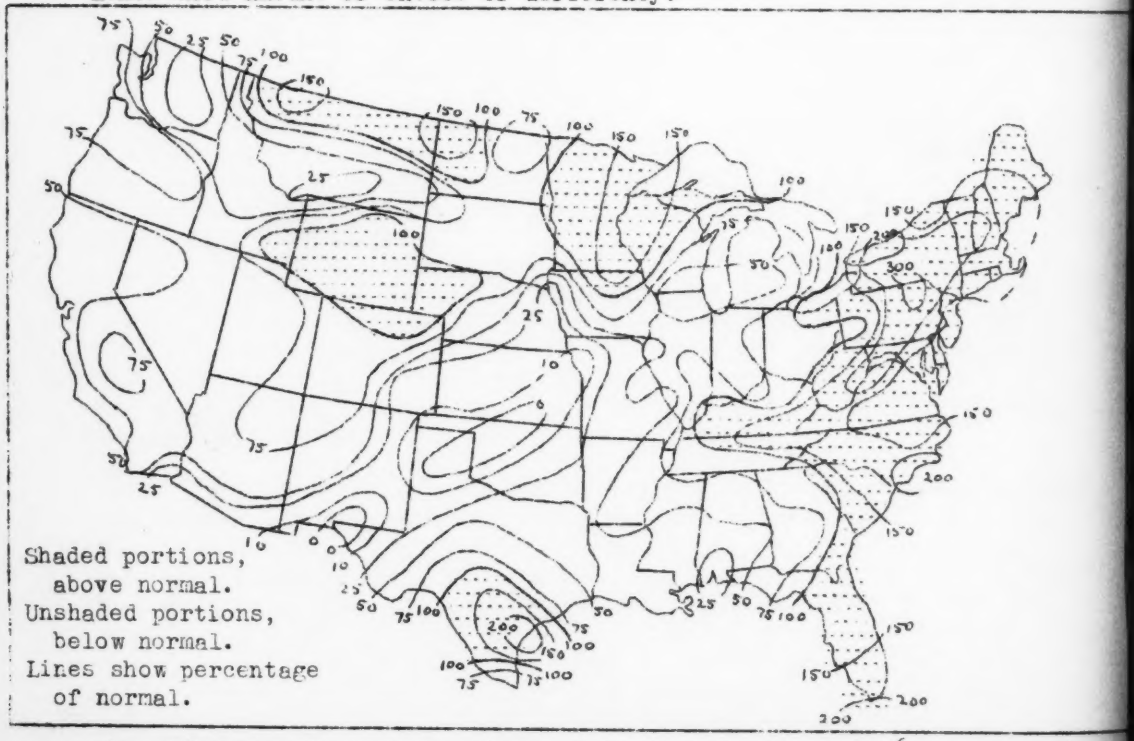

Fig. 32 Percentage of normal precipitation for March 1936.